PATENT COOPERATION TREATY

PCT

INTERNATIONAL PRELIMINARY REPORT ON PATENTABILITY

(Chapter II of the Patent Cooperation Treaty)

(PCT Article 36 and Rule 70)

Applicant's or agent's file reference A3-301PCT	**FOR FURTHER ACTION**	See Form PCT/IPEA/416
International application No. PCT/US2004/008528	International filing date *(day/month/year)* 19.03.2004	Priority date *(day/month/year)* 23.04.2003
International Patent Classification (IPC) or national classification and IPC H01R13/633, G06K13/08		
Applicant MOLEX INCORPORATED et al.		

1. This report is the international preliminary examination report, established by this International Preliminary Examining Authority under Article 35 and transmitted to the applicant according to Article 36.
2. This REPORT consists of a total of 5 sheets, including this cover sheet.
3. This report is also accompanied by ANNEXES, comprising:
   a. ☒ *sent to the applicant and to the International Bureau)* a total of 1 sheets, as follows:
      ☐ sheets of the description, claims and/or drawings which have been amended and are the basis of this report and/or sheets containing rectifications authorized by this Authority (see Rule 70.16 and Section 607 of the Administrative Instructions).
      ☐ sheets which supersede earlier sheets, but which this Authority considers contain an amendment that goes beyond the disclosure in the international application as filed, as indicated in item 4 of Box No. I and the Supplemental Box.
   b. ☐ *(sent to the International Bureau only)* a total of (indicate type and number of electronic carrier(s)) , containing a sequence listing and/or tables related thereto, in computer readable form only, as indicated in the Supplemental Box Relating to Sequence Listing (see Section 802 of the Administrative Instructions).

4. This report contains indications relating to the following items:

☒	Box No. I	Basis of the opinion
☐	Box No. II	Priority
☐	Box No. III	Non-establishment of opinion with regard to novelty, inventive step and industrial applicability
☐	Box No. IV	Lack of unity of invention
☒	Box No. V	Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement
☐	Box No. VI	Certain documents cited
☐	Box No. VII	Certain defects in the international application
☐	Box No. VIII	Certain observations on the international application

Date of submission of the demand	Date of completion of this report
05.11.2004	09.05.2005
Name and mailing address of the international preliminary examining authority: European Patent Office D-80298 Munich Tel. +49 89 2399 - 0 Tx: 523656 epmu d Fax: +49 89 2399 - 4465	Authorized Officer Tappeiner, R Telephone No. +49 89 2399-7915

INTERNATIONAL PRELIMINARY REPORT ON PATENTABILITY

International application No.
PCT/US2004/008528

Box No. I Basis of the report

1. With regard to the **language**, this report is based on the international application in the language in which it was filed, unless otherwise indicated under this item.

   ☐ This report is based on translations from the original language into the following language , which is the language of a translation furnished for the purposes of:
   - ☐ international search (under Rules 12.3 and 23.1(b))
   - ☐ publication of the international application (under Rule 12.4)
   - ☐ international preliminary examination (under Rules 55.2 and/or 55.3)

2. With regard to the **elements*** of the international application, this report is based on *(replacement sheets which have been furnished to the receiving Office in response to an invitation under Article 14 are referred to in this report as "originally filed" and are not annexed to this report)*:

Description, Pages	
1-11	as originally filed
Claims, Numbers	
1-4	received on 06.04.2005 with letter of 07.03.2005
Drawings, Sheets	
1/17-17/17	as originally filed

   ☐ a sequence listing and/or any related table(s) - see Supplemental Box Relating to Sequence Listing

3. ☒ The amendments have resulted in the cancellation of:
   - ☐ the description, pages
   - ☒ the claims, Nos. 5-16
   - ☐ the drawings, sheets/figs
   - ☐ the sequence listing *(specify)*:
   - ☐ any table(s) related to sequence listing *(specify)*:

4. ☐ This report has been established as if (some of) the amendments annexed to this report and listed below had not been made, since they have been considered to go beyond the disclosure as filed, as indicated in the Supplemental Box (Rule 70.2(c)).
   - ☐ the description, pages
   - ☐ the claims, Nos.
   - ☐ the drawings, sheets/figs
   - ☐ the sequence listing *(specify)*:
   - ☐ any table(s) related to sequence listing *(specify)*:

* *If item 4 applies, some or all of these sheets may be marked "superseded."*

INTERNATIONAL PRELIMINARY REPORT ON PATENTABILITY

International application No.
PCT/US2004/008528

Box No. V Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

1. Statement

Novelty (N)	Yes:	Claims	1-4
	No:	Claims	
Inventive step (IS)	Yes:	Claims	1-4
	No:	Claims	
Industrial applicability (IA)	Yes:	Claims	1-4
	No:	Claims	

2. Citations and explanations (Rule 70.7):

see separate sheet

Re Item V.
Reasoned statement with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

1. Reference is made to the following documents:

   D1 : US 6 290 136 B1 (KOSEKI YOSHITSUGU ET AL) 18 September 2001
   D2 : US 2002/142640 A1 (ABE KIYOSHI) 3 October 2002
   D3 : US 2002/146923 A1 (YU HUNG-CHI) 10 October 2002
   D4: JP 2001-085089 A as cited in the application

2. The document D1 is regarded as being the closest prior art to the subject-matter of claim 1 and shows (the references in parentheses applying to this document):
   a memory card connector comprising an insulating housing (4) having a rear terminal -mounting section which mounts a plurality of terminals (5) having contact portions for engaging appropriate contacts on a memory card; a metall shell (7) mounted on the housing and combining therewith to define an interior card-receiving cavity formed by a top plate (70) and opposite side plates (700) of the metal shell, the cavity having a front insertion opening to permit insertion and withdrawal of the memory card into and out of the connector; with the terminal-mounting section of the housing (4) located at the rear of the cavity;
   and a card ejector mechanism beneath the cavity adjacent one side thereof, whereby opposite side plates (700) define the opposite sides of the cavity.

   This features are also disclosed in documents D2 and D3.

   The subject-matter of claim 1 differs from this known prior art in that said card ejector mechanism includes a card-engaging slider movable with the card and having a cam slot in one of an outside face and a bottom face thereof, and one of the side plates of the metal shell includes a spring member for biasing a cam follower pin into the cam slot.

The subject-matter of claim 1 is therefore new (Article 33(2) PCT).

The problem to be solved by the present invention may be regarded as reducing the size of the memory card connector.

The solution to this problem proposed in claim 1 of the present application is considered as involving an inventive step (Article 33(3) PCT) for the following reasons:

Document D4 discloses a memory card connector comprising spring member for biasing a cam follower pin into a cam slot of a cam member. It does not disclose a metal shell.

Even if the man skilled in the art would provide the memory card connector as disclosed in document D4 with a metal shell, it would not be obvious to the man skilled in the art to replace the independent spring with a spring as part of the metal shell.

Claims 2-4 are dependent on claim 1 and as such also meet the requirements of the PCT with respect to novelty and inventive step.

The invention according to claims 1-4 is industrially applicable, these claims therefore complying with Article 33(4) PCT.

CLAIMS

1. A memory card connector (26), comprising:

an insulative housing (28) having a rear terminal-mounting section (28a) which mounts a plurality of terminals (58) having contact portions (58e) for engaging appropriate contacts on a memory card (36);

a metal shell (30) mounted on the housing and combining therewith to define an interior card-receiving cavity (32) formed by a top plate (30a) and opposite side plates (30b,30c) of the metal shell, the cavity having a front insertion opening (34) to permit insertion and withdrawal of the memory card into and out of the connector, with said terminal-mounting section of the housing being located at the rear of the cavity; and

a card ejector mechanism (60) at least partially beneath the cavity adjacent one side thereof, whereby the opposite side plates (30b,30c) of the metal shell (30) define the opposite sides of the cavity (32) wherein said card ejector mechanism (60) includes a card-engaging slider (62) movable with the card and having a cam slot (70) in one of an outside face (62c) and a bottom face thereof, and one of the side plates (30b) of the metal shell (30) includes a spring member (84) for biasing a cam follower pin (64) into the cam slot.

2. The memory card connector of claim 1 wherein said metal shell (30) is stamped and formed of sheet metal material, and said spring member comprises a spring arm (84) stamped out of the one side plate (30b) of the metal shell (30).

3. The memory card connector of claim 1 wherein said cam slot (70) is formed in the bottom face of the card-engaging slider, and the one of the side plates (30b) of the metal shell (30) has a bottom inwardly turned flange (98) on which the spring member (100) is formed.

4. The memory card connector of claim 3 wherein said metal shell (30) is stamped and formed of sheet metal material, and said spring member comprises a spring arm (100) stamped from said inwardly turned flange (98) out of the one side plate (30b) of the metal shell (30).

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AMENDED SHEET (ARTICLE 19)